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LISTS OF SPECIES

Fish, Sorocaba River basin, São Paulo State, Brazil

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Abstract

The Sorocaba River hydrographic basin locates in a sub-area known as Superior Medium Tietê in São Paulo State. The study was made in the low Sorocaba River. A relatively high diversity of fish species was noticed at that place, whose habits are also presumed to be diversified. The river in this region shows some important tributaries, which are the Sarapuí, Tatuí and Guarapó, and also a great number of smaller streams and marginal lagoons. Fishes were collected using gill-nets, purse seines, sieves and traps, line and hook, every month during two years. Fish species were 55, including 7 orders and 18 families. Characiformes and Siluriformes were the most represented with respectively 28 and 17 species.

Introduction

The Sorocaba hydrographic basin is located in São Paulo State known as Medium Superior Tietê (Figure 1). Relatively high fish diversity is recognized, and the fish species may present varied habits. It is located in the region known as Atlantic Upland and part of the Periferic Depression of the geologic Tubarão group at the sedimentary Paraná Basin. Its drainage area attains 5.269 km², and is surrounded by 22 cities. The Sorocaba River is the most important of that basin and is surrounded by the following cities: Ibiúna, Votorantim, Sorocaba, Iperó, Boituva, Tatuí, Cerquilho, Cesário Lange, Jumirim and Laranjal Paulista. It is the largest tributary of the Tietê river`s left margin and is 227 km long in which flow 13 cubic meters per second (Smith et al. 2003).

A relatively diverse fish fauna lives in these waters. The importance of this region to be studied is implemented by the fact that three important tributaries of its left margin, the Sarapuí, Tatuí and Guarapó locate at this place. Besides, some small streams and marginal lagoons presence result to enlarge the environmental variability. Though a former study pointed the fish fauna diversity in this basin, this

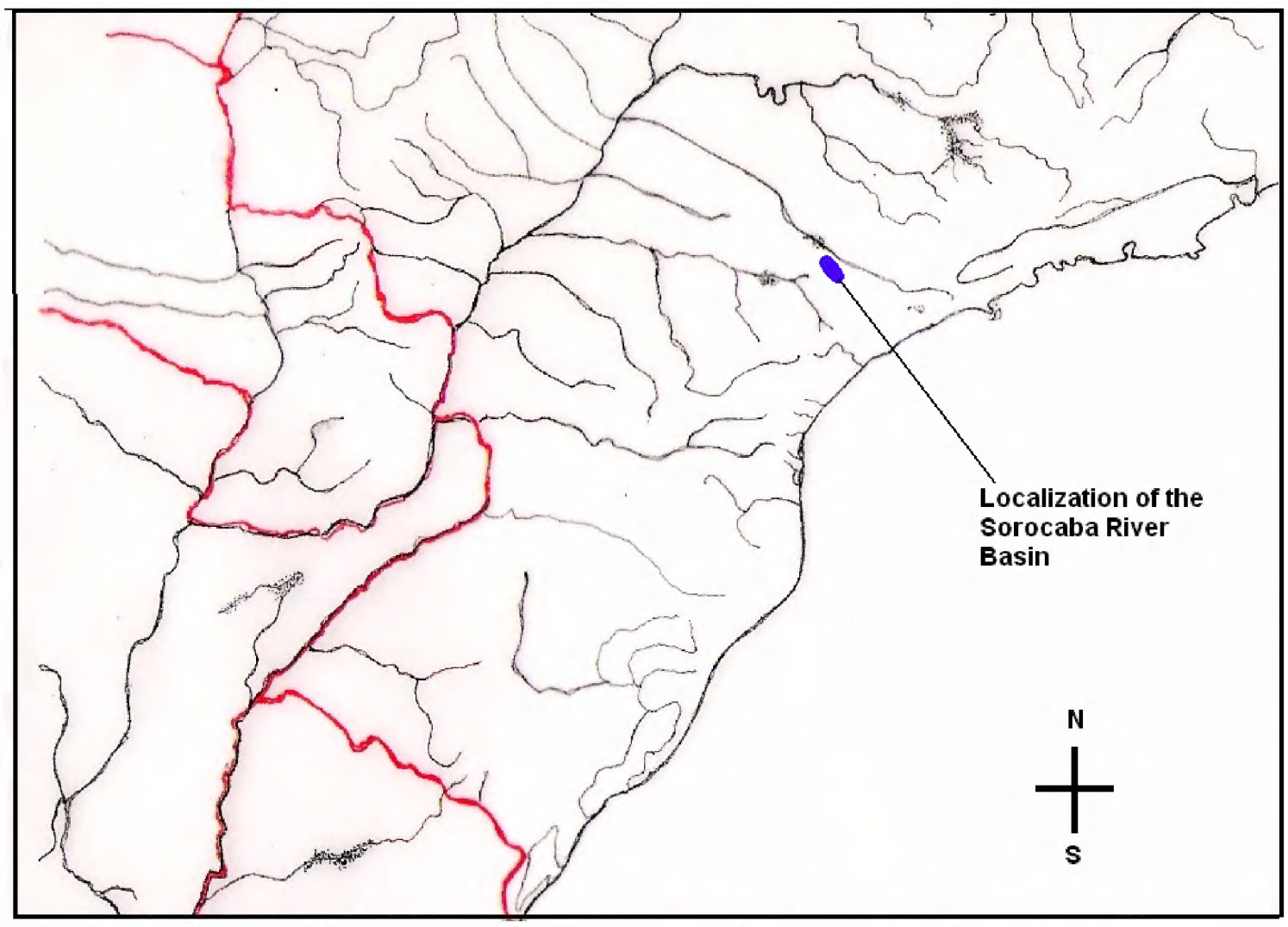

Figure 1. Partial map of Brazil showing the localization of the Sorocaba River Basin.

study may complement data obtained by Smith et al. (2003), and shows some other species, which were not observed at that study. Another important fact is that this author observed a low pollution in this region, in which the fish fauna studies are relatively poor.

Material and methods

The study was made at the sub-region of the low Sorocaba, near to the inflow of the Sarapuí River (23º19'51,62" S, 47º44'09,00" W) between the cities of Iperó and Tatuí, until the place where its waters flow into the Tietê River at the city of Laranjal Paulista (22º58'55,8" S, 47º48'24" W) (Figure 2). In this place, the Sorocaba River width varies from 30 to 50 m and its depth measures around 3 m, but varies from 50 cm in its rapids to 3 m at the pools.

Fish were caught using gill-nets, purse seines, sieves and traps, and captures were also complemented by utilizing line and hook. Authorization to collect was provided by Ibama (Instituto Brasileiro de Meio Ambiente) (Process 048/2004) and renewed by the authorization 087/2005. Collections were made from May 2004 to July 2006. Fish identification was made using the study of Smith et al. (2003), Britski (1972), Britski et al. (1984; 1999), Godoy (1975), and Verissimo et al. (2005). Specimens were deposited in the Zoology Department Collection of the Instituto de Biociências, Unesp - Rio Claro.

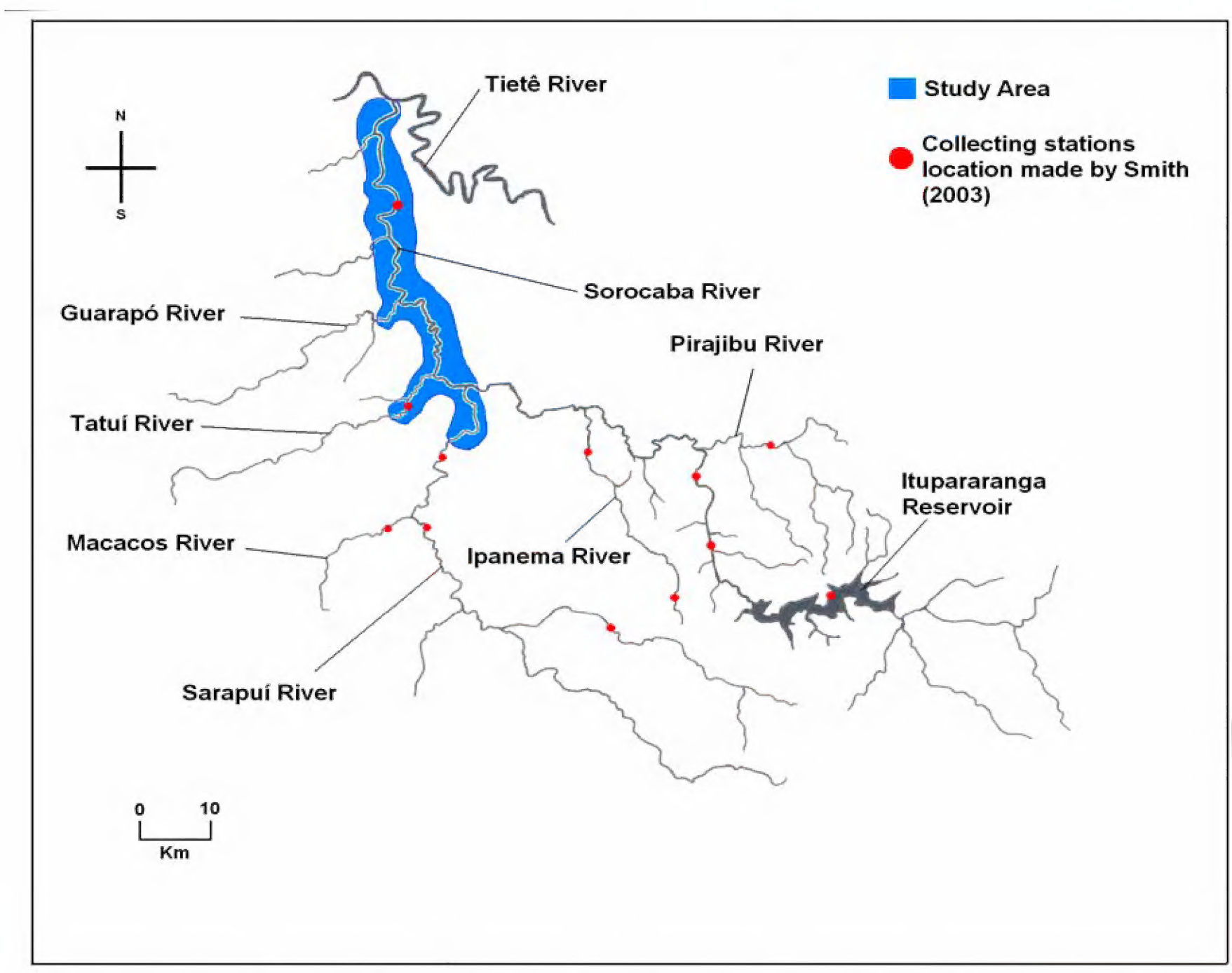

Figure 2. Localization of the study area in the sub-region of the low Sorocaba River basin and collecting stations location made by Smith (2003).

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Results and discussion

During this period were collected 55 species, included in 7 orders, 18 families and 42 genera. From the species recorded 29 are Characiformes, 17 Siluriformes, 4 Perciformes, 1 Gymnotiformes, 1 Cypriniformes, and 1 Synbranchiformes. Most are native and common to the Tietê Basin, but some are exotic, such as the Nile tilapia *Oreochromnis niloticus* (Linnaeus, 1758), the tilapia, *Tilapia rendalli* (Boulenger, 1897) and the carpa *Cyprinus carpio* (Boulenger, 1897).

Table 1. Fish species from the Sorocaba River Basin Low.

CHARACIFORMES	
Erythrinidae	*Hoplias malabaricus* (Bloch, 1794) – *traíra*
Prochilodontidae	*Prochilodus lineatus* (Valenciennes, 1847) – *curimbatá*
Curimatidae	*Steindachnerina insculpta* (Fernandez-Yepes, 1948) – *saguaru* *Cyphocharax modestus* (Fernandez-Yepes, 1948) – *saguaru*
Parodontidae	*Parodon nasus* (Kner, 1859) – *bananinha* *Apaeirodon piracicabae* (Eigenmann, 1907) – *bananinha*
Anostomidae	*Leporinus obtusidens* (Valenciennes, 1847) – *piapara* *L. friderici* (Bloch, 1794) – *piau* *L. octofasciatus* (Steindachner, 1917) – *piava-ferreira* *Schizodon nasutus* Kner, 1859 – *shimborê*
Chrenuchidae	*Characidium fasciatum* (Reinhardt, 1867) – *bananinha*
Characidae	
Mileinae	*Piaractus mesopotamicus* (Holmberg, 1887) – *pacu* *Metynnis* sp. – *pacu-peva*
Bryconinae	*Brycon orbignyanus* (Valenciennes 1849) – *piracanjuba*
Serrasalminae	*Serrasalmus spilopleura* (Kner, 1860) – *pirambeba*
Salmininae	*Salminus hilarii* (Valenciennes, 1849) – *tabarana*
Tetragonopterinae	*Astyanax altiparanae* Garutti & Britski, 2000 – *tambiu* *Astyanax fasciatus* (Cuvier, 1819) – *lambari-de-rabo-vermelho* *Astyanax* sp. – *lambari* *Hemigrammus marginatus* (Ellis, 1911) – *lambarizinho-de-rabo-vermelho*
Cheirodontinae	*Serrapinnus notonelas* (Eigenmann, 1915) – *lambarizinho* *Serrapinnus* sp. – *lambarizinho* *Bryconamericus stramineus* (Eigenmann, 1908) – *pequira* *Bryconamericus* sp. – *pequira* *Odontostilbe* sp. – *pequira*
Acestrorhynchynae	*Acestrorhynchus lacustris* (Reinhardt, 1874) – *saicanga* *Oligosarcus paranensis* (Meneses & Géry, 1983) – *saicanga* *Oligosarcus* sp. – *saicanga*
Triportheinae	*Triportheus* sp. – *sardinhão*
SILURIFORMES	
Pimelodidae	*Pimelodus maculatus* (Lacépède, 1803) – *mandi* *Iheringichthys labrosus* (Kröyer, 1855) – *mandi-beiçudo*
Heptapteridae	*Ramdia quelen* (Quoy & Gaimard, 1824) – *bagre* *Ramdia* sp. – *bagre* *Pimelodella* sp. – *mandizinho*

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Pseudopimelodidae	*Pseudopimelodus* cf. *mangurus* (Valenciennes, 1835) – *bagre-sapo*
Loricaridae	
Hypostominae	*Hypostomus* cf. *regani* (Ilhering, 1905) – *cascudo*
	Hypostomus ancistroides (Ilhering, 1911) – *cascudo*
	Hypostomus margaritifer (Regan, 1908) – *cascudo*
	Hypostomus sp.A – *cascudo*
	Hypostomus sp.B – *cascudo*
Loricarinae	*Rineloricaria* cf. *latirostris* (Valeciennes, 1840) – *cascudo-espada*
Doradidae	*Rhinodoras* cf. *dorbignyi* (Kner, 1855) – *mandi-serra*
Callichthyidae	*Callichthys callichthys* (Linnaeus, 1758) – *caborja*
	Hoplosternum littorale (Hancock, 1828) – *caborja*
	Corydoras aeneus (Gill, 1858) – *caborja*
	Corydoras sp. – *caborja*
GYMNOTIFORMES	
Gymnotidae	*Gymnotus* cf. *carapo* (Linnaeus, 1758) – *tuvira*
CYPRINODONTIFORMES	
Poecilidae	*Phalloceros caudimaculatus* (Hensel, 1868) – *barrigudinho*
	Poecilia reticulata (Peters, 1860) – *guaruzinho*
PERCIFORMES	
Cichlidae	*Geophagus brasiliensis* (Quoy & Gaimard, 1824) – *cará*
	Cichlassoma facetum (Jenyns, 1842) – *cará*
	Tilapia rendalli (Boulenger, 1897) – *tilápia*
	Oreochromis niloticus (Linnaeus, 1758) – *tilápia-do-Nilo*
SYMBRANCHIFORMES	
Synbranchidae	*Synbrancus marmoratus* (Bloch, 1795) – *mussum*
CYPRINIFORMES	
Ciprinidae	*Cyprinus carpio carpio* (Boulenger, 1897) – *carpa*

Castro and Menezes (1998) state that in São Paulo State more than 260 fish species are registered, which are distributed in 25 families. Siluriformes, followed by Characiformes are the most important in species numbers. At another moment Smith et al. (2003) described 53 species at The Sorocaba River basin, which were distributed in 18 families and 6 orders, from which 28 species belonged to Characiformes, 17 to Siluriformes, 3 to Gymnotiformes, 2 to Perciformes, 2 to Cyprinodontiformes, and 1 belonged to Synbranchiformes. The same author (Smith 2003) revised his first observation and stated that in reality 65 species have been observed in this system.

Several fishermen and people living near to the river observe that other native species use to occur, even being rare, in the region. This is the case of the species pintado, *Pseudoplatystoma corruscans* (Spix & Agassiz, 1829), *cachara*, *Pseudoplatystoma faciatum* (Linnaeus, 1766), dourado, *Salminus maxillosus* (Valenciennes, 1849), and jurupoca, *Hemisorubim platyrhynchos* (Valenciennes, 1840), the two latter ones being common to this place around 40 years before (A. L. Santos and A. Villares, pers. comm.). Pollution and dam constructions should be the causes of their scarcity in this place, which interrupt fish migration processes (Smith 2003). As Britski (1972) states, such species should occur in the Piracicaba basin, because they are common in the Tietê River.

Other exotic species, which did not appear in these collections, have also been observed, following the report by A. L. Santos and A. Villares (pers. comm.). They do not belong to the

system. Among them, tambaqui, *Colossoma macropomum* (Cuvier, 1818), african catfish, *Clarias gariepinus* (Burchell, 1822), tambacu, an hybrid fish which results from the crossing of two distinct genera (*Piaractus* and *Colossoma*), and tucunaré, *Cichla* sp., an Amazon basin fish. The presence of these exotic species may be due to pisciculture ponds and some sport fishing ponds in the region, from which they sometimes escape, when heavy rains occur and some floods happen. This may be the main cause of exotic species dispersion in Brazil (Fernandes et al. 2003). The mishandling of these systems may cause the principal problems of such "invasions" of natural environments by these exotic species. During all these years such activities have not been controlled either by the owners of these proprietors or by the environmental authorities (Fernandes et al. 2003). People who do not know anything about ecologic principles also introduce some exotic species.

In this study one can see that 40 species are common to the study made by Smith (2003), but 17 species observed by Smith did not appear in this study (Table 1). This difference may be due to the fact that such species use to live near to the upper parts of the river or in small streams, which were not sampled in the study, or simply did not appear. Following Smith (2003), species like *Astyanax scabripinnis*, *Characidium* cf. *zebra*, *Cheirodon* sp. were found only at the Ribeirão dos Macacos. Besides, *Hyphessobrycon* sp. uses to live in flooded areas and *Tricomycterus* sp. (Trichomycteridae) is commonly found in streams of a reservoir known as the Itupararanga reservoir and are also found at upper waters. *Eigenmannia* aff. *virescens*, *Rineloricaria* sp., and *Hisonotus depressicauda* are restricted to the Ipanema river. Other species like *Astyanax eigenmanniorum*, *Galeocharax knerii*, *Cyphocharax nagelli*, *Leporinus striatus*, *L. macrocephalus*, *L. elongatus*, *Imparfinis mirini*, *Microglanis* sp. and *Sternopygus macrurus* are registered to occur in Sorocaba River but were not sampled.

In this study 6 species which were not formerly registered for the Sorocaba basin were observed. They were pacu, *Piaractus mesopotamicus*, pacu-peva, *Metynnis* sp., piracanjuba, *Brycon orbignyanus*, bagre-sapo, *Pseudopimelodus* cf. *mangurus*, mandi-serra, *Rhinodoras dorbignyi*, and cascudo, *Hypostomus* cf. *regani*.

In general terms it has been observed that at this region of the Sorocaba basin there is a considerably diverse fish fauna, exploring diverse aquatic environments. It should also be considered that many of these environments are unexplored, and so, much more research could be made, namely in some streams and the upper waters of The Guarapó, Tatuí and Sarapuí rivers, where potentially other species may appear.

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ERRATUM

In the article published in November 2006 some scientific names were misspelled due to typing errors in the body of the text (RG), and in the table (GAVJ). Some scientific names were misspelled by replacing some characters of the words. The species which have been misspelled in the text were: *Oreochromis niloticus*, *Hemisorubim platyrhynchos*, *Trichomycterus* sp., *Eigenmannia* aff. v*irescens*, *Astyanax eigenmanniorum*, and *Imparfinis mirini*. In the table the incorrect spellings of scientific names were: *Apareiodon piracicabae*, *Schizodon nasutus*, *Serrasalmus spilopleura*, *Rhamdia quelen*, *Rhamdia* sp., *Pseudopimelodus* cf. *mangurus*, *Rhineloricaria* cf. *latirostris*, *Hoplosternum littorale*, *Cichlasoma facetum*, and *Tilapia rendalli.*

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